As mentioned in section **4B**, preservation of the town's many scenic resources and unique environments is not only the core of this plan, but is also a primary focus of the TCS. Open space preservation is also treated vis-à-vis housing, transportation and economic development needs in the CDP. Those documents are closely related to this plan and are two of its most important references.

In addition, Ipswich is currently participating in the Essex County Reconnaissance Survey. The purpose of the survey, which is under the guidance of the Essex National Heritage Area in partnership with the Massachusetts DCR, is to document the historic landscapes of Essex County. Through an inventory process that emphasizes local input, information and recommendations pertaining to threatened or unprotected heritage landscapes are being incorporated into local and regional smart-growth plans.

Finally, the new management plan being developed for the Crane Beach Reservation will develop guidelines for identifying and protecting scenic values. The plan is to incorporate the scenic values protocol into management decisions, visitor education and day-to-day practices. This will serve as a model for other organizations and will be useful to Ipswich in its efforts to identify and protect scenic values.

4G. Environmental Problems

General

The environmental problems of Ipswich and neighboring areas that influence open space and recreation planning are discussed in the 1990 state Executive Office of Environmental Affairs/Division of Conservation Services ***Open Space and Recreation Plan Requirements*** (revised in February 2001). The requirements focus mainly on actual or potential environmental contamination and secondarily on alteration. Contamination, actual or potential, does affect existing open space and recreational lands primarily through the contamination of adjacent or overlying waters. In the past, most tidal areas of the Ipswich and Eagle Hill rivers were frequently restricted or closed to recreational and commercial shellfishing. In the fall of 1999, some areas of the Ipswich River were reopened to "unrestricted" shellfishing (depuration not required) as a result of successful efforts to control sources of contamination affecting those areas. Remaining contamination problems still require correction. This is necessary not only because of their effects on the shellfish resources and their utilization, but also because of similar effects on other species dependent on the salt-marsh habitat, and because of implications for water-contact recreation.

The problems are typical examples of non-point source pollution. These include on-site sewage disposal, runoff from concentrated agricultural operations, runoff from urban activities in the downtown area, and runoff of sand and salt from the roads in winter. Although significant controls have been implemented, runoff into the ACEC from the sewage-sludge composting operation on upland at the end of

Town Farm Road remains a concern of the Conservation Commission. The wastewater treatment plant effluent is discharged into the salt marsh of Greenwood Creek, a tidal tributary of the Ipswich River, as described earlier. On-site sewage disposal and concentrated agricultural operations along Argilla Road and in adjacent Essex pose threats to aquatic and recreational resources of the Essex and Castle Neck rivers.

Some areas of town have benefited from careful planning. This is evident in the private advanced wastewater treatment plants of the Ipswich Country Club and limiting of the golf course's use of pesticides, herbicides and fertilizer. Most other areas of town were developed before the environmental impact was anticipated. The Candlewood Golf Course, for example, and homeowners collectively, are under no such restrictions on the use of chemicals. The town recently upgraded its sewage treatment plant and its Town Wharf sewage pump station. Replacement of the force main that carries sewage from the wharf pumping station to the treatment plant has reduced or eliminated threats of overflows of untreated sewage into the Ipswich River and the salt marshes of the Eagle Hill River.

There continues to be interest in developing an alternative to present on-site waste disposal for the Great Neck area, despite the failure of a 2003 initiative to sewer the entire Jeffreys Neck/Great Neck area. If implemented, such a step could have major negative implications for open space preservation through encouragement of further development. The state DEP has issued an order to cease the use of most individual on-site sewage disposal systems on Little Neck, the property of the Feoffees of the Grammar School. The Feoffees are implementing this order through installation of a system of sewers and a holding tank on Little Neck. Collected wastewater from the system will initially be trucked to the town sewage treatment plant. Although the Board of Health has considered taking initial steps to establish a comprehensive management program for on-site wastewater disposal, the matter is currently in abeyance. If this program evolves and is implemented, threats from non-point source pollution would be significantly reduced.

The greatest threat to open space and recreational lands continues to come from further development of currently available land. While such land conversion normally accelerates and increases runoff and erosion, and decreases groundwater recharge, these impacts can be managed. On the other hand, increased demands for water, increased loads on the sewage system, increased waste generation, and secondary impacts of growth are not preventable and are only marginally manageable. These impacts may require water supply development and expansion of other town services and facilities.

Hazardous Waste

Hazardous waste problems in Ipswich do not and should not influence open space and recreational planning.

Landfills

The town's large tract of open land at the end of Town Farm Road is in part a former landfill, which has been closed for many years. Use of a small portion of this property as a refuse transfer station has also been discontinued. At present only leaves and brush are being collected there for use in a commercial operation run by the Agresource Company. Another part is used for disposal of waste soil and final capping of a portion of the former landfill. Agresource uses the central portion of the site, under agreement with the town, for composting and processing of sewage sludge combined with leaves and other waste products. The site's full utilization as open space or for recreational purposes is thus inhibited, though the perimeter of the Town Farm has been preserved as conservation land. This

conservation land and the adjacent salt marsh are still relatively pristine, though odors and the threat of pollution by runoff from the treatment operations are real. No other landfills or solid-waste disposal sites are known to influence open space or recreation planning.

Erosion

In recent decades development in Ipswich has been largely confined to lands that are not highly erodible. Thus erosion is not viewed as significantly influencing open space and recreation planning. However, much of the privately-held developable land in Ipswich is hills, including Bush, Bartholemew, Turkey, Scott, the westerly portion of Turner Hill, Town and Heartbreak hills, for example. These lands have high erosion potential if further developed and are adjacent to water supply tributaries or other surface-water resources. Erosion potential also exists on the coastal banks of Little Neck and on Great Neck, which is under constant development pressure.

Chronic Flooding

While minor flooding of the Ipswich River above the Sylvania dam has occurred on occasion, the flood-absorbing function of the Wenham Swamp upstream largely protects Ipswich. Open space and recreation lands are well-suited to absorption of flood flows with little long-term impact. Flood-plain zoning should be rigorously enforced to preserve this function and prevent future damage and loss.

The Miles River watershed experiences considerable flooding of open space in its lower reaches. This flooding has multiple natural causes, including topography and vegetative growth, but the most pronounced cause is beaver activity. Every effort should be made to ensure that the land (some of which along County Road is already protected by ECGA and TTOR) remains open. The redevelopment of the Don Bosco property by New England Biolabs is another assurance that much of this land will remain open. The company has put much of the land under conservation restriction.

Kimball Brook, and to a lesser extent Farley Brook, have histories of flooding affecting the developed downtown area. Further development, particularly of Bush, Scott and Turkey hills, is likely to exacerbate this problem.

Future sea-level rise, predicted during the next half-century to century to be on the order of a meter or more, could have a serious impact on the coastal resources of Ipswich and adjacent areas. A one-meter rise would threaten the barrier beach geology of both Plum Island and Castle Neck, in turn placing at risk the lands and waters they shelter. All salt marshes would be routinely flooded at mean high tide, which would result in their conversion largely to mud flats and low-marsh vegetation. No preventive measures are available to the town alone, but it must be very careful concerning development proposals near the ACEC.

Sedimentation

Sedimentation is an historic problem of the Ipswich River estuary. It affected commercial traffic in early times and challenges recreational boaters today. Flood-flow reductions by water-supply withdrawals upriver may reduce scouring of the tidal reach from the Sylvania dam to below the Town Landing. However there is no documentation of this impact. Road sanding, and to a lesser extent erosion, unquestionably contribute to sedimentation in the estuary, but a more definitive assessment is required for an action recommendation.

Development Impact

Environmental degradation is usually associated with development of previously open spaces. Degradation may take the form of visual impact, harm to or loss of habitat, increase in surface runoff quantities and rates, increased

applications to the land of chemicals and nutrients. Infrequently contamination results from improperly installed or operated on-site wastewater disposal systems. However, such contamination is more likely to result from improper use, overloading or failure of older on-site disposal systems. Most of these systems have functioned acceptably for many years, although a small percentage have chronic problems and contribute to contamination of surface waters.

Additional failures of existing systems, contributing contamination and requiring system upgrades, may occur as a result of intensified use of the systems through extension of periods of use, addition of load or changes in adjacent topography and drainage patterns. Enhanced regulation also leads to requirements for system upgrades. In some cases these upgrades require encroachment against wetland resources, posing a threat of further degradation. In Ipswich, these types of problems are manifested most frequently in the Great Neck area and, formerly, on Little Neck. Also threatening the quality of the Ipswich River and the recreational opportunities it provides is the unknown number of illegal septic-line connections to the town's storm drains. This problem seems especially acute in the older residential areas and in the downtown itself. The Coastal Pollution Control Committee's study and 1995 *Final Report* details the extent of the problem, identifies sources and recommends corrective actions, many of which have been undertaken.

Alteration of the landscape from development is and will continue to be a focus in new subdivisions. Although careful planning and strict regulations have helped curb direct environmental degradation, the fact that new homes are being located near wetlands, on hilltops and in open fields is affecting the character of the remaining open space in Ipswich. As a result, wildlife corridors are decreasing in size, views are being altered, and large open parcels are being broken up. In an effort to mitigate this disturbing trend, citizens at the 1992, 1999 and 2004 town meetings voted to improve and strengthen the language of the town's Open Space Preservation Zoning Bylaw. The goal is not to stop development, but rather to safeguard the quality and quantity of the environment and associated recreational activities, which are often responsible for drawing the development here in the first place. A few cluster developments have occurred since 1992, but the bylaw was still not working well enough to mitigate the impact of standard subdivision development. Consequently, the 1999 amendments require developers of subdivisions with six or more lots to submit cluster plans with open space set-asides in addition to any conventional plan. It is not mandatory that they use the cluster plan.

There is renewed interest in and development activity pursuant to Chapter 40B, MGL. This is the state's "anti-snob" zoning law that facilitates the development of low/moderate income housing. This statute allows the Zoning Board of Appeals to override or waive provisions of any town bylaw that may interfere with such development, thus allowing impacts on wetlands resources that would otherwise not occur.

The new action plan reflects ongoing needs in this critical arena, including the town's first effort in many years at organized planning for growth management. The mechanism for this planning was the ad hoc Growth Management Steering Committee. It was established in 1999 from a broad base within the community and included key town officials. Also in 1999, a citizens' group, with assistance from the Department of Planning and Development and the Ipswich Partnership, initiated an effort to develop a town character statement for Ipswich. Two well-attended public meetings were held, intensive workshops were conducted and, as a result, the Ipswich *Community Development Plan* was written and adopted by the fall 2004 town meeting. The CDP has been introduced by the CDP Implementation Task Force to town boards and

commissions for appropriate actions. This task force was created by the fall 2004 Town Meeting.

Groundwater and Surface-Water Pollution

Ipswich has experienced a significant surface-water quality problem in the coastal areas of town. The primary source of pollution affecting the coastal waters is human and animal fecal wastes. These sources contribute bacteria, pathogens and nutrients to the surface waters. They are extremely damaging, especially to the shellfishing industry. The contamination problem had reached such proportions that shellfishing was prohibited at all times in the Ipswich River and portions of the Castle Neck River, and for about half the year in the remaining areas due to bacterial contamination. With an increasing rate of closures due to pollution, not to mention the more naturally caused episodes of red tide, Ipswich faced the threat of future loss of its multimillion-dollar shellfishing industry. (See the Ipswich Shellfish Advisory Board report, ***Shellfishing in Ipswich: 1991***, and the above-referenced Coastal Pollution Control Committee ***Final Report of 1995***.) Responses by the town have altered this gloomy prognosis considerably, with the reopening of some of the Ipswich River clam flats, although these areas must be closed after rain events because of continuing threat of contamination.

There are several point and non-point sources of bacteria and other types of contamination affecting the surface waters of Ipswich, as described previously. In addition, many of the same sources of pollution exist in the adjacent communities of Essex and Rowley, thus having the potential to further affect shellfishing resources. As the Coastal Pollution Control Committee stated in its report: "We have identified septic systems, storm drains, domestic animals and wildlife, boating, the treatment plant, and pollution from other towns as sources of fecal coliform in Ipswich waters. We have been able to determine the magnitude of some of these sources, but others are proving difficult to define other than in a general way."

Groundwater pollution is also of major concern in the community. Improperly sited and failing septic systems in residential areas adjacent to the coast may be contaminating the groundwater because the water table is very near the surface. Much of the area overlying one of the public water supply aquifers is currently zoned industrial. Because this area (Mitchell Road) is not on town sewerage, there is concern about contamination of the groundwater by present and future industrial uses in the district. This issue was addressed in the previous action plan, but the property owners failed to agree to sewer the road in question. In addition, possible pollution from future developments in and around water supply districts is of concern. To address these threats, the town has updated, upgraded, and otherwise revised and improved its bylaw establishing water supply protection districts and regulating activities within those districts. The new bylaw meets all the requirements of the state DEP.